

AAB Medical Technologist (MT) - Chemistry Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What is the primary goal of quality control in a laboratory?**
 - A. To speed up the testing process**
 - B. To ensure accuracy and reliability of test results**
 - C. To minimize the costs of laboratory tests**
 - D. To increase the number of tests performed**

- 2. Which reagent is used in the alkaline oxidation of uric acid?**
 - A. Phosphoric acid**
 - B. Phosphotungstic acid**
 - C. Sulfuric acid**
 - D. Acetic acid**

- 3. What is the common result when analyzing urine for the presence of ketones?**
 - A. Indication of dehydration**
 - B. Sign of carbohydrate metabolism**
 - C. Presence of infection**
 - D. Indication of metabolic acidosis**

- 4. Which classical method is used for the detection of creatinine in the laboratory?**
 - A. Enzymatic method**
 - B. Jaffe reaction**
 - C. Colorimetric assay**
 - D. HPLC analysis**

- 5. Lipemia is associated with an increased amount of which of the following?**
 - A. LDL cholesterol**
 - B. triglycerides**
 - C. HDL cholesterol**
 - D. bilirubin**

- 6. Which of the following is the major extracellular cation?**
- A. Sodium**
 - B. Potassium**
 - C. Magnesium**
 - D. Chloride**
- 7. Which enzyme is the most sensitive indicator of obstructive jaundice?**
- A. Alanine aminotransferase**
 - B. Alkaline phosphatase**
 - C. Gammaglutamyltransferase**
 - D. Lactate dehydrogenase**
- 8. What primary action should be taken if a hemolyzed sample is identified prior to testing?**
- A. Go ahead with the tests**
 - B. Document it and discard the sample**
 - C. Retain it for future comparisons**
 - D. Analyze only the serum portion**
- 9. What is the normal concentration range for serum calcium levels?**
- A. 7.0-9.0 mg/dL**
 - B. 8.5-10.5 mg/dL**
 - C. 10.0-12.0 mg/dL**
 - D. 11.5-13.5 mg/dL**
- 10. An elevated creatinine value is most likely to be accompanied by which other value?**
- A. Elevated blood urea nitrogen**
 - B. Reduced glucose level**
 - C. Normal electrolyte levels**
 - D. Decreased proteinuria**

Answers

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1. B
2. B
3. D
4. B
5. B
6. A
7. B
8. B
9. B
10. A

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Explanations

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1. What is the primary goal of quality control in a laboratory?

A. To speed up the testing process

B. To ensure accuracy and reliability of test results

C. To minimize the costs of laboratory tests

D. To increase the number of tests performed

The primary goal of quality control in a laboratory is to ensure accuracy and reliability of test results. This is essential because laboratory results have significant implications for patient diagnosis and treatment. Quality control processes include regular calibration of instruments, validation of methods, and the use of control samples to monitor the performance of assays. By maintaining stringent quality control measures, laboratories can confidently report results that are both precise and accurate, ultimately leading to better patient outcomes and trust in laboratory services. While speeding up the testing process, minimizing costs, or increasing the number of tests performed may be important operational goals for some laboratories, they do not encapsulate the core objective of quality control. The fundamental focus of quality control is to uphold the integrity and dependability of the test results, as any inaccuracies could lead to misdiagnosis or inappropriate treatment decisions.

2. Which reagent is used in the alkaline oxidation of uric acid?

A. Phosphoric acid

B. Phosphotungstic acid

C. Sulfuric acid

D. Acetic acid

Phosphotungstic acid is the reagent used in the alkaline oxidation of uric acid. This reagent acts as an effective oxidizing agent in a basic solution, facilitating the conversion of uric acid into a measurable form. The oxidation process is significant in several biochemical analyses since uric acid is a waste product derived from purine metabolism. When phosphotungstic acid is employed in the assay, it helps to ensure accurate quantification of uric acid levels in biological samples. Moreover, this method can help assess various clinical conditions, including gout and other disorders associated with purine metabolism, by enabling precise monitoring of uric acid levels. The choice of phosphotungstic acid specifically is important due to its stability and effectiveness at alkaline pH, making it ideal for this reaction. Other acids listed, such as phosphoric acid, sulfuric acid, and acetic acid, do not serve the role of oxidizing agents in the alkaline oxidation of uric acid. Instead, they have different applications in biochemical contexts and do not provide the oxidation properties necessary for this specific reaction.

3. What is the common result when analyzing urine for the presence of ketones?

- A. Indication of dehydration**
- B. Sign of carbohydrate metabolism**
- C. Presence of infection**
- D. Indication of metabolic acidosis**

When analyzing urine for the presence of ketones, a positive result typically indicates metabolic acidosis. Ketones are produced during the breakdown of fats, particularly when the body is in a state of carbohydrate deprivation, such as in uncontrolled diabetes, fasting, or low-carbohydrate diets. In these scenarios, the body shifts from using glucose as its primary energy source to using fat, leading to the production of ketone bodies. As the ketone levels rise, they can surpass the kidney's ability to reabsorb them, resulting in their excretion in urine. This increase in ketones is associated with an acidotic state, which is referred to as ketoacidosis, commonly seen in diabetic patients. Therefore, the presence of ketones in urine serves as an important indicator of metabolic acidosis related to altered metabolism and energy usage within the body. The other options presented, while they may involve changes in urine analysis or conditions requiring further investigation, do not specifically relate to the direct presence of ketones in urine.

4. Which classical method is used for the detection of creatinine in the laboratory?

- A. Enzymatic method**
- B. Jaffe reaction**
- C. Colorimetric assay**
- D. HPLC analysis**

The Jaffe reaction is a classical method used for the detection of creatinine in the laboratory due to its established biochemical mechanism. This method relies on the reaction between creatinine and alkaline picrate, resulting in a colored complex that can be quantitatively measured. In a typical laboratory setting, the intensity of the color produced is directly proportional to the concentration of creatinine in the sample being analyzed, making it a practical and reliable method for routine clinical use. This reaction is advantageous because it is relatively simple and cost-effective compared to more modern techniques. It has a long history in clinical laboratories and allows for a rapid assessment of kidney function through creatinine clearance measurements. Although other methods like enzymatic assays, colorimetric assays, and HPLC can also be used for creatinine measurement, the Jaffe reaction remains a widely recognized and traditional approach in clinical laboratory diagnostics.

5. Lipemia is associated with an increased amount of which of the following?

- A. LDL cholesterol
- B. triglycerides**
- C. HDL cholesterol
- D. bilirubin

Lipemia is characterized by an elevated level of lipids in the blood, particularly triglycerides. When triglyceride levels rise significantly, it results in a cloudy or milky appearance to the plasma, which is what is referred to as lipemia. Triglycerides are a major component of fat in the diet and are synthesized in the liver, making their elevation a key indicator of lipemic conditions. In the context of lipemia, the increase in triglycerides can be due to various factors, including dietary intake, genetic predispositions, and metabolic disorders. Understanding this relationship is crucial for laboratory diagnostics and patient management, as high triglyceride levels can contribute to other health concerns, such as pancreatitis. Other lipid fractions, like LDL and HDL cholesterol, do not directly correlate with lipemia. LDL cholesterol may also be elevated in certain conditions, but it is not a defining feature of lipemia. Similarly, HDL cholesterol is often referred to as "good" cholesterol and is typically associated with a protective role against cardiovascular disease rather than being a marker of lipemia. Bilirubin, a product of the breakdown of hemoglobin, is unrelated to the presence of lipids in the blood. Thus, the correct answer focuses on the primary lipid species associated with

6. Which of the following is the major extracellular cation?

- A. Sodium**
- B. Potassium
- C. Magnesium
- D. Chloride

Sodium is recognized as the major extracellular cation in the body, playing a crucial role in various physiological processes. It is predominantly found in the blood and the fluid surrounding cells, contributing significantly to the regulation of blood pressure, blood volume, and overall fluid balance. Sodium is essential for maintaining the osmotic balance of extracellular fluid and is vital in the conduction of nerve impulses and muscle contraction. In contrast, while potassium is also an important cation, it is primarily located within cells, making it the major intracellular cation rather than extracellular. Magnesium, while important for numerous enzymatic processes and also found in extracellular fluid, is present in much lower concentrations compared to sodium. Chloride, on the other hand, is primarily an anion, balancing the positive charges of cations like sodium but does not fit the criteria of being a cation itself. This distinction of sodium as the major extracellular cation is fundamental to understanding electrolyte balance and its implications for health and disease.

7. Which enzyme is the most sensitive indicator of obstructive jaundice?

- A. Alanine aminotransferase**
- B. Alkaline phosphatase**
- C. Gammaglutamyltransferase**
- D. Lactate dehydrogenase**

Alkaline phosphatase is recognized as the most sensitive enzyme indicator of obstructive jaundice. This is because, during bile duct obstruction or cholestasis, the production of alkaline phosphatase increases significantly. The enzyme is present in high concentrations not only in the liver but also in the bile ducts and bones, making it particularly responsive to conditions that affect bile flow. In obstructive jaundice, there is a blockage in the bile ducts that leads to an accumulation of bile acids, which subsequently increases the synthesis and release of alkaline phosphatase from the liver. Elevated levels of this enzyme in the serum serve as a clear biochemical marker for such conditions, helping in the diagnosis of liver diseases associated with bile flow obstruction. Other enzymes, such as alanine aminotransferase, gamma-glutamyltransferase, and lactate dehydrogenase, can also indicate liver function issues or damage but are not as specific or sensitive to obstructive jaundice as alkaline phosphatase. Alanine aminotransferase is more commonly elevated in conditions involving hepatocellular damage, while gamma-glutamyltransferase can be elevated in various liver conditions, and lactate dehydrogenase is more nonspecific to liver diseases. Thus

8. What primary action should be taken if a hemolyzed sample is identified prior to testing?

- A. Go ahead with the tests**
- B. Document it and discard the sample**
- C. Retain it for future comparisons**
- D. Analyze only the serum portion**

The primary action of documenting and discarding a hemolyzed sample before testing is crucial because hemolysis can significantly affect the accuracy and reliability of laboratory test results. When red blood cells break down, they release intracellular components into the serum or plasma, which can lead to falsely elevated or decreased values for various analytes, such as potassium, lactate dehydrogenase, and other enzymes. This disruption may compromise the interpretation of results, leading to incorrect clinical decisions. Documenting the hemolysis serves as a record of the sample's quality for quality control purposes, making it clear to healthcare providers that the results may not be reliable due to pre-analytical factors. Simply going ahead with tests on a hemolyzed sample could lead to misleading outcomes, while retaining it for future comparisons does not address the immediate need for accurate results. Analyzing only the serum portion is also not appropriate, as it cannot eliminate the impact of hemolysis on test results. Therefore, the most responsible approach is to document the issue and discard the compromised sample, ensuring that subsequent testing is performed on an acceptable, non-hemolyzed specimen.

9. What is the normal concentration range for serum calcium levels?

- A. 7.0-9.0 mg/dL
- B. 8.5-10.5 mg/dL**
- C. 10.0-12.0 mg/dL
- D. 11.5-13.5 mg/dL

The normal concentration range for serum calcium levels is indeed 8.5-10.5 mg/dL. This range is accepted as the reference interval in most clinical settings and is crucial for various physiological functions. Calcium plays a significant role in bone health, muscle contraction, nerve transmission, and blood coagulation. Maintaining serum calcium levels within this range is essential for physiological stability. Deviations from this normal range can indicate underlying health issues; for example, low levels (hypocalcemia) may suggest vitamin D deficiency or parathyroid hormone problems, while high levels (hypercalcemia) can indicate hyperparathyroidism or malignancy. Understanding the normal serum calcium levels helps in diagnosing and managing conditions related to calcium metabolism and can guide healthcare professionals in their clinical decision-making processes. This knowledge is vital for medical technologists who may analyze serum calcium levels as part of a comprehensive metabolic panel.

10. An elevated creatinine value is most likely to be accompanied by which other value?

- A. Elevated blood urea nitrogen**
- B. Reduced glucose level
- C. Normal electrolyte levels
- D. Decreased proteinuria

An elevated creatinine value is often indicative of impaired kidney function, as creatinine is a waste product generated from muscle metabolism and is primarily eliminated from the body through the kidneys. When kidney function declines, the kidneys are less efficient at clearing both creatinine and other nitrogenous waste products from the bloodstream. In these cases, blood urea nitrogen (BUN) levels typically rise along with creatinine levels. The relationship between BUN and creatinine is particularly important in clinical assessments of renal health. A concurrent elevation in both BUN and creatinine suggests that the kidneys are not adequately filtering these substances, which is common in conditions affecting renal function such as acute kidney injury or chronic kidney disease. The other options do not typically correlate with an elevated creatinine level in the context of impaired renal function. A reduced glucose level does not have a direct connection to creatinine levels, as glucose metabolism is largely independent of renal excretory capability. Normal electrolyte levels might occur but are not guaranteed in the context of elevated creatinine, given the kidney's role in regulating electrolytes. Furthermore, decreased proteinuria would suggest less protein is spilling into the urine and is less relevant to the scenario of elevated creatinine due to compromised renal function.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://aabmtchemistry.examzify.com>

We wish you the very best on your exam journey. You've got this!

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